



# Project Facts

## Recovering “Stranded Oil” Can Substantially Add to U.S. Oil Supplies Ten Reports Examine Basin-Oriented Strategies For Increasing Domestic Oil Production

A series of reports -- four new, three updated and three previously released -- prepared for the U.S. Department of Energy (DOE) Office of Fossil Energy indicate significant potential for increasing domestic oil supplies. This could result from applying carbon dioxide enhanced oil recovery (CO<sub>2</sub>-EOR) technology to recover nearly 89 billion barrels of additional oil from currently “stranded” oil resources in ten regions of the United States. The reports summarize the results of basin-oriented CO<sub>2</sub>-EOR assessments prepared by Advanced Resources International for the Fossil Energy Office of Oil and Natural Gas.

CO <sub>2</sub> -EOR Technically Recoverable Resource Potential				
Basin/Area	No. Large Reservoirs Assessed	All Reservoirs (Ten Basins/Areas Assessed)		
		OOIP* (Billion Barrels)	ROIP** (Billion Barrels)	Technically Recoverable (Billion Barrels)
Alaska	34	67.3	45.0	12.4
California	172	83.3	57.3	5.2
Gulf Coast	239	44.4	27.5	6.9
Mid-Continent	222	89.6	65.6	11.8
Illinois and Michigan	154	17.8	11.5	1.5
Permian	207	95.4	61.7	20.8
Rocky Mountains	162	33.6	22.6	4.2
Texas: East and Central	199	109	73.6	17.3
Williston	93	13.2	9.4	2.7
Louisiana Offshore	99	28.1	15.7	5.9
<b>Total</b>	<b>1,581</b>	<b>581.7</b>	<b>390.0</b>	<b>88.7</b>

\* Original oil in place, in all reservoirs in basins/areas. \*\* Remaining oil in place, in all reservoirs in basins/areas.

Source: Advanced Resources International

According to the Oil and Gas Journal, CO<sub>2</sub>-EOR is the fastest growing form of enhanced oil recovery in the United States, producing an estimated 206,000 barrels per day in 2004, mostly in the Permian Basin of West Texas and New Mexico, representing 4 percent of the Nation's crude oil production. This experience, plus the innovative CO<sub>2</sub>-EOR project at the Weyburn field in Saskatchewan, Canada, could lead the way in helping to overcome the risks and economic barriers to applying this technology to recover “stranded oil” in other basins.

The reports reveal the potential for expanding the contribution of this technology for recovering crude oil from mature domestic oil fields. In addition, the reports assess the performance of CO<sub>2</sub>-EOR projects conducted in these regions during the past 30 years, reviewing both successful and unsuccessful efforts.

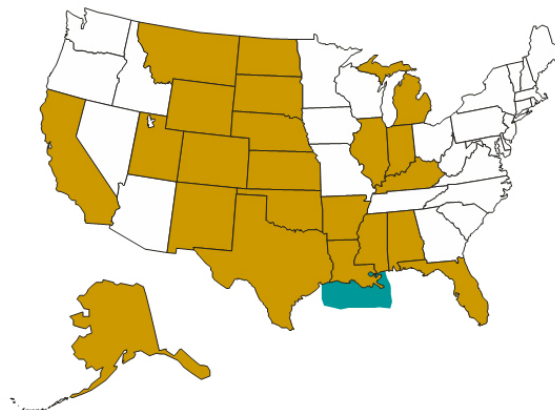
Traditional oil recovery methods will leave behind an estimated 390 billion barrels of already discovered oil resources in the ten basins studied. Such “stranded oil” provides a substantial target for EOR technology, representing about two-thirds of the region's original oil in-place in discovered, producing fields. The ten assessments evaluated 1,581 large oil reservoirs to identify those that screen favorably for CO<sub>2</sub>-EOR.

Extrapolating this sample to all reservoirs in the ten regions demonstrated that nearly 89 billion barrels of additional oil are technically recoverable with today's state-of-the-art CO<sub>2</sub>-EOR technology. Advanced EOR technologies could significantly increase this oil recovery potential.

Overcoming the barriers to the wider use of CO<sub>2</sub>-EOR technologies may entail:

- Bringing state-of-the-art CO<sub>2</sub>-EOR technology to oil fields in regions where it is currently not yet applied.
- Lowering the risks inherent in applying new technology to complex oil reservoirs, by conducting research, pilot tests and field demonstrations of CO<sub>2</sub>-EOR in geologically challenging oil fields.
- Providing a package of "risk mitigating" actions, such as state production tax incentives, federal investment tax credits, and royalty relief, to reduce potential oil price and market risks and to improve the economic competitiveness of pursuing this domestic oil resource.
- Establishing low-cost, reliable "EOR-ready" CO<sub>2</sub> supplies from both natural and industrial sources. In the near-term, this could include high-concentration CO<sub>2</sub> emissions from refinery hydrogen plants, gas processing facilities and other industrial sources. In the longer-term, this could include capturing low CO<sub>2</sub> concentration emissions from electric power generation plants and other sources.

U.S. Basins/Regions Studied for Future Potential for CO<sub>2</sub>-EOR



Together, these "basin-oriented strategies" could help revitalize state economies, increase federal and state revenues, and enable additional domestic oil to be recovered. The potential benefits are substantial. Eighty-nine billion barrels of additional domestic oil recovery, at \$40 per barrel, could yield:

- A reduction in the Nation's trade deficit of over \$3.6 trillion through reduced oil imports.
- Enhanced national energy security from an additional 2 to 3 million barrels per day of domestic oil production by 2020.
- Over 200,000 high-paying domestic jobs from the direct and indirect economic effects of increased domestic oil production.
- Over \$800 billion of additional federal, state and local revenues from royalties, production, and corporate income taxes.

### **Further information**

Copies of the basin assessments are available at [www.fossil.energy.gov](http://www.fossil.energy.gov). For information about DOE Oil and Natural Gas Program research on emerging EOR technologies, see [www.netl.doe.gov](http://www.netl.doe.gov).

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